Goldschmidt 2022 Abstract
https://doi.org/10.46427/gold2022.10484

Mesozoic subduction-related metamorphic record from amphibolites of Sava zone: Moslavačka Gora (Croatia)

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Metamafic rock occurrences are rare in the generally felsic crystalline surface outcrops from the SW parts of the Pannonian Basin as in the case of Mt. Moslavačka Gora (MG), Croatia. General petrology of the MG encompasses Cretaceous S-type granitoid pluton (~82 Ma) that intruded the Ordovician (~480-490 Ma) granitoids [1] now present as fragmented belts at W and SE margins of the Cretaceous pluton. Metapelites recorded LP-HT granulite facies anatexis [2] between 90 and 100 Ma [1] and metamafic occurrences gave amphibolite cooling age of 80-90 Ma [3, 4], and both are predominantly found as xenoliths entrained by the Cretaceous granite in the marginal or central parts of the pluton.

Our study focused on rare MG amphibolite xenoliths (m- to hundred m-sized) in order to establish their relation to other lithologies and their significance in the interpretation of the Mesozoic geodynamic evolution of the Sava zone i.e. suture zone that existed between Laurasia and peri-Gondwanan tectonic units (Adria). Immobile trace element geochemistry of amphibolites points to the N-MORB protolith related to the Neotethyan realm. Stromatic appearance of amphibolites and grain-scale observations point to a general anatectic reaction Hbl+Pl+Qtz±Ilm=Di±Ttn±Grt±Opx+melt taking place in the upper amphibolite to granulite facies conditions. Thermodynamic modelling confirmed a clockwise P-T path for the formation of amphibolites and the development of pressure assemblage Amph+PI+Ilm+Qtz in range 630-700°C and 800-950 MPa while the metapelites recorded conditions in range 720-790°C and 200-500 MPa [2]. Field evidence and known age data suggest that the anatexis in metamafic and metapelitic rocks took place at mid-crustal levels before the fragmentation and entrainment of blocks by the intruding S-type felsic magma. This data contrast previous interpretations that migmatisation of MG metamorphic lithologies was caused by the intrusion of the Cretacous S-type pluton and links the evolution of metapelites and metamafic rocks to an earlier subduction-related regional metamorphic event.

[1] Starijaš et al. (2010) *Swiss J Geosci*, 103, 61–82. [2] Petrinec and Balen (2014) EGU2014-6186. [3] Lanphere and Pamić (1992) *Acta Geologica*, 22, 97–111. [4] Balen et al. (2001) *PANCARDI 2001 Abstracts II*, DP-2.